



IMB-146

User Manual

Version 1.0

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

"Perchlorate Material-special handling may apply, see
www.dtsc.ca.gov/hazardouswaste/perchlorate"

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1. *Introduction*

Thank you for purchasing ASRock **IMB-146** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 contains the introduction of the motherboard. Chapter 2 provides step by step installation instructions. Chapter 3 includes information about the UEFI.



Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock's website. You may find the latest VGA cards and CPU support list on ASRock's website as well. <http://www.asrock.com>
If you require technical support related to this motherboard, please visit our website for specific information about the model you are using. www.asrock.com/support/index.asp

1.1 Package Contents

ASRock **IMB-146** Motherboard

(Mini-ITX Form Factor: 6.7-in x 6.7-in, 17.0 cm x 17.0 cm)

ASRock **IMB-146** Quick Installation Guide

ASRock **IMB-146** Support CD

1 x Serial ATA (SATA) Data Cables

1 x Serial ATA (SATA) HDD Power Cables

1 x I/O Panel Shield

1.2 Specifications

Platform	Mini-ITX Form Factor: 6.7-in x 6.7-in, 17.0 cm x 17.0 cm ASRock DuraCaps (100% Japan-made high-quality Conductive Polymer Capacitors)
CPU	Intel® Dual-Core Atom™ CedarView Processor D2550/ N2600/N2800 Supports Hyper-Threading Technology
Chipset	Intel® NM10 Express Chipset
Memory	Single Channel DDR3 memory technology 2 x 204-pin DDR3 SO-DIMM slots (see CAUTION 1) Supports DDR3 1066/800 MHz SDRAM Max. capacity of system memory: 8GB (see CAUTION 2)
Expansion Slots	1 x mini-PCI Express slot
Graphics	Intel® PowerVR SGX545 Supports DirectX 9, Pixel Shader v3.0 and OGL 3.0 Max. shared memory 256MB Four VGA Output options: D-Sub, 2 x LVDS and DVI Supports D-Sub with max. resolution up to 1920x1200 @ 60Hz Supports 2-CH/24bits LVDS with max. resolution up to 1920x1200 @ 60Hz Supports DVI with max. resolution up to 1920x1200 @ 60Hz
Audio	2 CH Audio (Realtek ALC662 Audio Codec)
LAN	PCIE x1 Gigabit LAN 10/100/1000 Mb/s Realtek RTL8111E-VL Supports Wake On LAN Supports PXE
Rear Panel I/O	1 x DC Jack 1 x PS/2 Keyboard/Mouse port 1 x D-Sub port 1 x Serial Port (RS-232) 4 x USB 2.0 Ports 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)
Internal I/O	2 x SATA2 3.0 Gb/s connectors, support NCQ, AHCI and Hot Plug 1 x COM port header 2 x LVDS connectors 1 x DVI connector

	1 x Printer port
	1 x LPC Debug header
	1 x CPU Fan connector (1 x 4-pin)
	1 x Chassis Fan connector (1 x 3-pin)
	4 pin 12V power connector
	SATA power connector
	2 x USB 2.0 headers (supports 3 USB 2.0 ports)
BIOS	16Mb AMI UEFI Legal BIOS with GUI support
	Supports "Plug and Play"
	ACPI 1.1 Compliance Wake Up Events
	Supports jumperfree
Support CD	SMBIOS 2.3.1 Support
	Drivers
Hardware Monitor	CPU/Chassis Temperature Sensing
	CPU/Chassis Fan Tachometer
	CPU Quiet Fan
OS	Voltage Monitoring: +12V, +5V, +3.3V, CPU Vcore
	Microsoft® Windows® 7 compliant
Certifications	FCC, CE, WHQL

* For detailed product information, please visit our website:

<http://www.asrock.com>

CAUTION!

1. N2600 only supports one SO-DIMM and 4GB of system memory.
2. Due to the operating system's limitation, the actual memory size of the reservation for system usage under Windows® 32-bit operating systems may be less than 4GB.

1.3 Unique Features

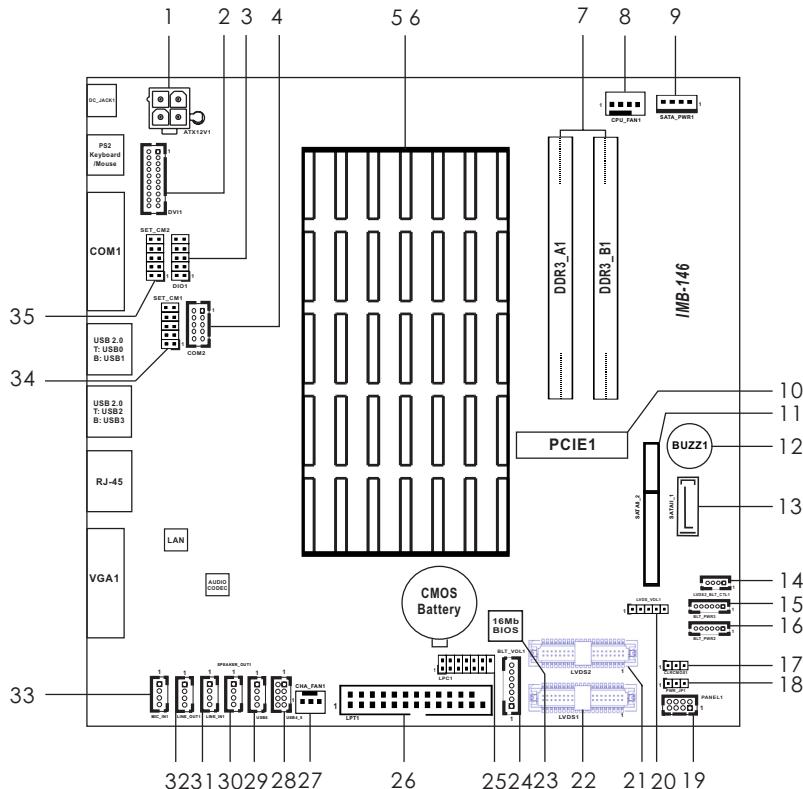
ASRock Instant Flash

ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

ASRock Crashless BIOS

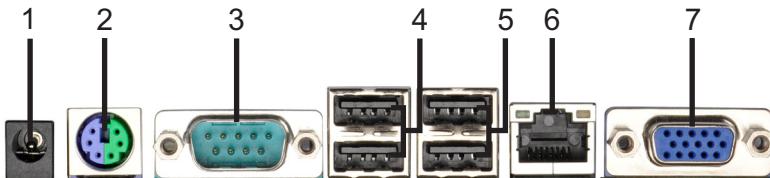
ASRock Crashless BIOS allows users to update their BIOS without fear of failing. If power loss occurs during the BIOS update process, ASRock Crashless BIOS will automatically finish the BIOS update procedure after regaining power. Please note that BIOS files need to be placed in the root directory of your USB disk. Only USB2.0 ports support this feature.

1.4 Motherboard Layout



1	4-pin ATX 12V Power Connector
2	DVI Connector (DVI1)
3	Digital I/O header (DIO1)
4	COM Port Header (COM2)
5	CPU
6	NM10 Express Chipset
7	2 x 204-pin DDR3 SO-DIMM Slots (DDR3_A1, DDR3_A2)
8	CPU Fan Connector (CPU_FAN1)
9	SATA Power Connector (SATA_PWR1)
10	mini PCI Express Slot (PCIE1)
11	SATA2 Connector (SATAII_2, Black)
12	Buzzer (BUZZ1)
13	SATA2 Connector (SATAII_1, Blue)
14	LVDS2 Backlight Control Connector (LVDS2_BLT_CTL1)
15	Backlight Power Connector (BLT_PWR3, for LVDS2)
16	Backlight Power Connector (BLT_PWR2, for LVDS1)
17	Clear CMOS Jumper (CLRCMOS1)
18	PWR-On Mode Jumper (PWR_JP1)
19	System Panel Header (PANEL1)
20	LVDS VDD PWR Setting Jumper (LVDS_VOL1)
21	LVDS Connector (LVDS2)
22	LVDS Connector (LVDS1)
23	SPI Flash Memory (16Mb)
24	Backlight & Amp Volume Control Header (BLT_VOL1)
25	LPC Debug Header (LPC1)
26	Printer Port (LPT1)
27	Chassis Fan Connector (CHA_FAN1)
28	USB 2.0 Header (USB4_5)
29	USB 2.0 Header (USB6)
30	Audio AMP Output Speaker Header (SPEAKER_OUT1)
31	Line-In Connector (LINE_IN1)
32	Line-Out Connector (LINE_OUT1)
33	MIC-In Connector (MIC_IN1)
34	COM Power Setting Jumper (SET_CM1)
35	COM Power Setting Jumper (SET_CM2)

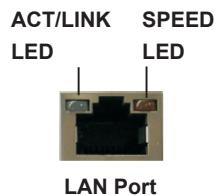
1.5 I/O Panel



1	DC Jack (Φ 2.0)
2	PS2 Keyboard/Mouse
3	COM Port (COM1)
4	USB 2.0 Ports (USB0_1)
5	USB 2.0 Ports (USB2_3)
6*	LAN RJ-45 Port
7	D-Sub (VGA1)

* There are two LEDs on each LAN port. Please refer to the table below for the LAN port LED indications.

LAN Port LED Indications			
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	100Mbps connection	Green	1Gbps connection



Chapter 2: Installation

This is a Mini-ITX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Pre-installation Precautions

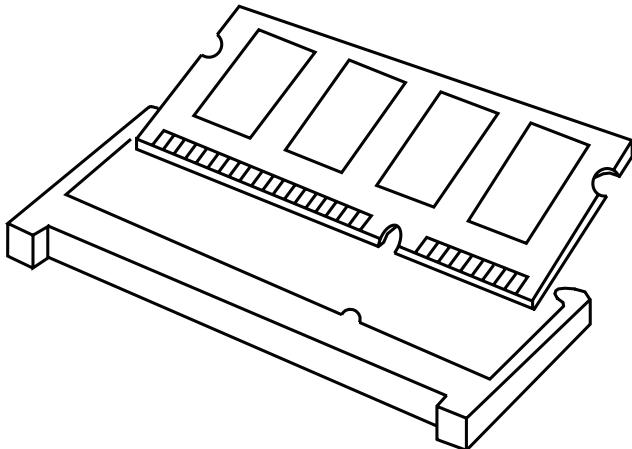
Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.
2. In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
5. When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

2.1 Installing Memory Modules (DIMM)

This motherboard provides two 204-pin DDR3 (Double Data Rate 3) SO-DIMM slots.

Step 1. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

Step 2. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

2.2 Expansion Slots (PCI Express Slots)

There is 1 mini PCI Express slot on this motherboard.

mini-PCIE Slots: mini_PCIE1 is used for mini PCIE cards.

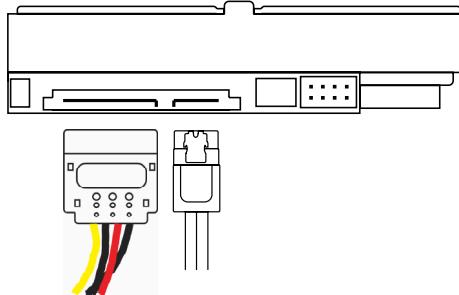
Installing an Expansion Card

- Step 1. Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
- Step 2. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

2.3 Installing Serial SATA / SATA2 Hard Disks

STEP 1: Connect the SATA power cable to the hard disk.

STEP 2: Connect one end of the SATA data cable to the hard disk.

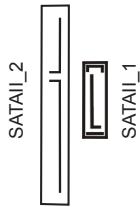


STEP 3: Connect the other end of the SATA data cable to the mother-board's SATA2 connectors.

Serial ATA2 Connectors

(SATAII_1: see p.10, No. 13)

(SATAII_2: see p.10, No. 11)



These two Serial ATA2 (SATA2) connectors support SATA data cables for internal storage devices. The current SATA2 interface allows up to 3.0 Gb/s data transfer rate.

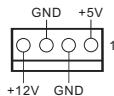
2.4 Power Connectors

ATX 12V Power Connector
(4-pin ATX12V1)
(see p.10, No. 1)



Please connect a power supply to this connector.

SATA Power Connector
(4-pin SATA_PWR1)
(see p.10, No. 9)



Please connect a SATA power cable.

2.5 Installing the System Panel

Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

PWRBTN (Power Switch):

Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.

RESET (Reset Switch):

Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):

Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):

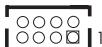
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.



The white wires are negative (Connect to - or GND pins), while the colored ones are positive.

System Panel Header
(8-pin PANEL1)
(see p.10, No. 19)



PIN	Signal Name	PIN	Signal Name
1	GND	2	RESET#
3	GND	4	PWRBTN#
5	HDLED+	6	HDLED-
7	PLED+	8	SUS LED

2.6 Onboard Headers and Connectors

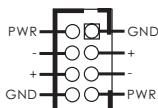


Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard!

USB 2.0 Headers

(8-pin USB4_5)

(see p.10, No. 28)



(4-pin USB6)

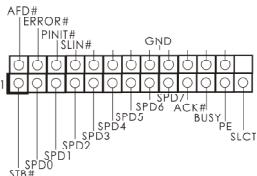
(see p.10, No. 29)



Print Port Header

(25-pin LPT1)

(see p.10, No. 26)



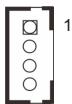
Besides four default USB 2.0 ports on the I/O panel, there are two USB 2.0 headers on this motherboard. The USB 2.0 headers can support three USB 2.0 ports.

Audio AMP Output

Speaker Header

(4-pin SPEAKER_OUT1)

(see p.10, No. 30)



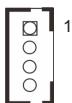
This is an interface for print port cable that allows convenient connection of printer devices.

PIN	Signal Name
1	SPK L+
2	SPK L-
3	SPK R-
4	SPK R+

Line-In Header

(4-pin LINE_IN1)

(see p.10, No. 31)



PIN	Signal Name
1	LINE L
2	AGND
3	LINE R
4	LINE JD

Line-Out Header
(4-pin LINE_OUT1)
(see p.10, No. 32)



PIN	Signal Name
1	LOUT L
2	AGND
3	LOUT R
4	LOUT JD

MIC-In Header
(4-pin MIC_IN1)
(see p.10, No. 33)



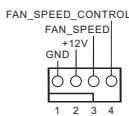
PIN	Signal Name
1	MIC L
2	AGND
3	MIC R
4	MIC JD

Chassis Fan Connector
(3-pin CHA_FAN1)
(see p.10, No. 27)



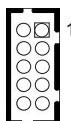
Please connect a fan cable to the fan connector and match the black wire to the ground pin.

CPU Fan Connector
(4-pin CPU_FAN1)
(see p.10, No. 8)



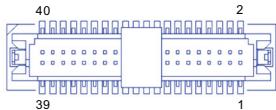
Though this motherboard provides a 4-Pin CPU fan (Quiet Fan) connector, 3-Pin CPU fans can still work successfully even without fan speed control. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

Serial Port Header
(10-pin COM2)
(see p.10, No. 4)



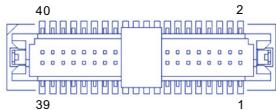
PIN	Signal Name	PIN	Signal Name
2	NC	1	GND
4	COM PWR/RI	3	DTR
6	CTS	5	TXD
8	RTS	7	RXD
10	DSR	9	COM PWR/DCD

LVDS Connector
(40-pin LVDS1)
(see p.10, No. 22)

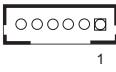
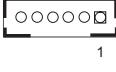


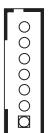
PIN	Signal Name	PIN	Signal Name
39	GND	40	GND
37	LVDS1 D3(-)	38	LVDS1 D3(+)
35	LVDS1 CLK(-)	36	LVDS1 CLK(+)
33	LVDS1 D2(-)	34	LVDS1 D2(+)
31	LVDS1 D1(-)	32	LVDS1 D1(+)
29	LVDS1 D0(-)	30	LVDS1 D0(+)
27	GND	28	GND
25	LVDS1 D3(-)	26	LVDS1 D3(+)
23	LVDS1 CLK(-)	24	LVDS1 CLK(+)
21	LVDS1 D2(-)	22	LVDS1 D2(+)
19	LVDS1 D1(-)	20	LVDS1 D1(+)
17	LVDS1 D0(-)	18	LVDS1 D0(+)
15	B/L ENABLE	16	GND
13	B/L ADJUST	14	LVDS PWR EN
11	DDC CLK	12	DDC DATA
9	LVDS PWR	10	LVDS PWR
7	VCC 3.3V	8	GND
5	+12V	6	GND
3	+12V	4	+12V
1	+12V	2	+12V

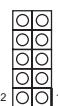
(40-pin LVDS2)
(see p.10, No. 21)

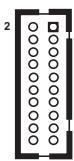


PIN	Signal Name	PIN	Signal Name
39	GND	40	GND
37	NC	38	NC
35	NC	36	NC
33	NC	34	NC
31	NC	32	NC
29	NC	30	NC
27	GND	28	GND
25	LVDS2 D3(-)	26	LVDS2 D3(+)
23	LVDS2 CLK(-)	24	LVDS2 CLK(+)
21	LVDS2 D2(-)	22	LVDS2 D2(+)
19	LVDS2 D1(-)	20	LVDS2 D1(+)
17	LVDS2 D0(-)	18	LVDS2 D0(+)
15	B/L ENABLE	16	GND
13	B/L ADJUST	14	LVDS PWR EN
11	NC	12	NC
9	LVDS PWR	10	LVDS PWR
7	VCC 3.3V	8	GND
5	+12V	6	GND
3	+12V	4	+12V
1	+12V	2	+12V

Inverter Power Control Connector (6-pin BLT_PWR2) (see p.10, No. 16)		1,2: +12V 3: Panel Backlight Enable 4: Panel Backlight Control 5,6: GND
(6-pin BLT_PWR3) (see p.10, No. 15)		

Backlight & Amp Volume Control Header (7-pin BLT_VOL1) (see p.10, No. 24)		1: PWRBTN 2: Volume Up 3: Volume Down 4: Panel BackLight UP 5: Panel BackLight Down 6: GND 7: PWR LED
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Digital I/O Header (10-pin DIO1) (see p.10, No. 3)		<table border="1"> <thead> <tr> <th>PIN</th><th>Signal Name</th><th>PIN</th><th>Signal Name</th></tr> </thead> <tbody> <tr> <td>10</td><td>GND</td><td>9</td><td>+5V</td></tr> <tr> <td>8</td><td>GP3</td><td>7</td><td>GP7</td></tr> <tr> <td>6</td><td>GP2</td><td>5</td><td>GP6</td></tr> <tr> <td>4</td><td>GP1</td><td>3</td><td>GP5</td></tr> <tr> <td>2</td><td>GP0</td><td>1</td><td>GP4</td></tr> </tbody> </table>	PIN	Signal Name	PIN	Signal Name	10	GND	9	+5V	8	GP3	7	GP7	6	GP2	5	GP6	4	GP1	3	GP5	2	GP0	1	GP4
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10	GND	9	+5V																							
8	GP3	7	GP7																							
6	GP2	5	GP6																							
4	GP1	3	GP5																							
2	GP0	1	GP4																							

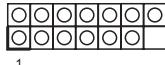
DVI Connector (DVI1) (see p.10, No. 2)		<table border="1"> <thead> <tr> <th>PIN</th><th>Signal Name</th><th>PIN</th><th>Signal Name</th></tr> </thead> <tbody> <tr> <td>2</td><td>NC</td><td>1</td><td>GND</td></tr> <tr> <td>4</td><td>GND</td><td>3</td><td>TMDS CLK-</td></tr> <tr> <td>6</td><td>TMDS DATA1+</td><td>5</td><td>TMDS CLK+</td></tr> <tr> <td>8</td><td>TMDS DATA1-</td><td>7</td><td>GND</td></tr> <tr> <td>10</td><td>GND</td><td>9</td><td>GND</td></tr> <tr> <td>12</td><td>DDC DATA</td><td>11</td><td>TMDS DATA0+</td></tr> <tr> <td>14</td><td>DDC CLK</td><td>13</td><td>TMDS DATA0-</td></tr> <tr> <td>16</td><td>GND</td><td>15</td><td>GND</td></tr> <tr> <td>18</td><td>TMDS DATA2+</td><td>17</td><td>HOT PLUG</td></tr> <tr> <td>20</td><td>TMDS DATA2-</td><td>19</td><td>+5V</td></tr> </tbody> </table>	PIN	Signal Name	PIN	Signal Name	2	NC	1	GND	4	GND	3	TMDS CLK-	6	TMDS DATA1+	5	TMDS CLK+	8	TMDS DATA1-	7	GND	10	GND	9	GND	12	DDC DATA	11	TMDS DATA0+	14	DDC CLK	13	TMDS DATA0-	16	GND	15	GND	18	TMDS DATA2+	17	HOT PLUG	20	TMDS DATA2-	19	+5V
PIN	Signal Name	PIN	Signal Name																																											
2	NC	1	GND																																											
4	GND	3	TMDS CLK-																																											
6	TMDS DATA1+	5	TMDS CLK+																																											
8	TMDS DATA1-	7	GND																																											
10	GND	9	GND																																											
12	DDC DATA	11	TMDS DATA0+																																											
14	DDC CLK	13	TMDS DATA0-																																											
16	GND	15	GND																																											
18	TMDS DATA2+	17	HOT PLUG																																											
20	TMDS DATA2-	19	+5V																																											

LVDS2 Backlight
Control Connector
(4-pin LVDS2_BLT_CTL1)
(see p.10, No. 14)



1: GND
2: Backlight Down
3: Backlight Up
4: LVDS2 EN

LPC Debug Header
(13-pin LPC1)
(see p.10, No. 25)



PIN	Signal Name	PIN	Signal Name
14	+3V	13	No pin
12	+3V	11	+3V
10	GND	9	GND
8	LAD3	7	LAD2
6	LAD1	5	LAD0
4	LFRAME#	3	RESET#
2	GND	1	CLK

2.7 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is “Short”. If no jumper cap is placed on the pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when a jumper cap is placed on these 2 pins.



Clear CMOS Jumper
(3-pin CLRCMOS1)
(see p.10, No. 17)



CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed.

PWR-On Mode Jumper
(3-pin PWR_JP1)
(see p.10, No. 18)



1-2 : AT Mode
2-3 : ATX Mode

LVDS VDD PWR
Setting Jumper
(5-pin LVDS_VOL1)
(see p.10, No. 20)



1-2 : +3V
3-4 : +5V
4-5 : +12V

COM Power Setting

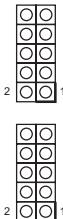
Jumpers

(10-pin SET_CM1)

(see p.10, No. 34)

(10-pin SET_CM2)

(see p.10, No. 35)



PIN	Signal Name	PIN	Signal Name
10	RRI#	9	DDCD#
8	P9	7	P1
6	+5VIO	5	+5VIO
4	P9	3	P1
2	+12VIO	1	+12VIO

2.8 Operating System Setup

This motherboard supports Microsoft® Windows® 7. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer your OS documentation for more information.

2.8.1 Installing Windows® 7 without RAID

Using AHCI Mode

STEP 1: Set Up UEFI.

Press <F2> or <Delete> at system POST. Set **AHCI Mode** in UEFI Setup Utility > Advanced > Storage Configuration > SATA Mode.

STEP 2: Install Windows® 7 on your system.

Using IDE Mode

STEP 1: Set Up UEFI.

Press <F2> or <Delete> at system POST. Set **IDE Mode** in UEFI Setup Utility > Advanced > Storage Configuration > SATA Mode.

STEP 2: Install Windows® 7 on your system.

2.9 Installing Drivers

The Support CD that comes with the motherboard contains necessary drivers and useful utilities that enhance the motherboard's features.

2.9.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

2.9.2 Drivers Menu

The drivers compatible to your system will be auto-detected and listed on the support CD driver page. Please follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

2.9.3 Utilities Menu

The Utilities Menu shows the application softwares that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

2.9.4 Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information.

2.10 Dual Monitor

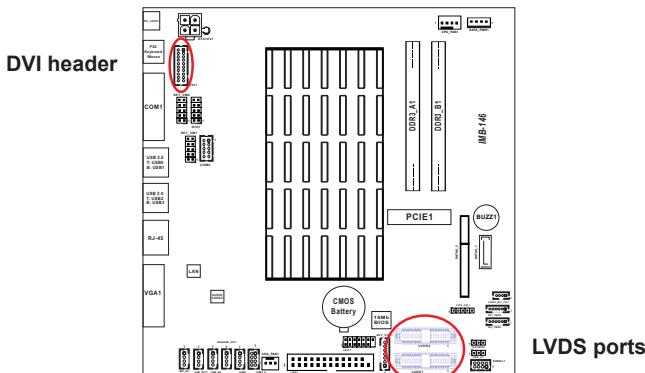
Dual Monitor

This motherboard supports dual monitor. With the internal VGA output support (D-Sub, DVI and LVDS), you can enjoy dual monitor without installing any add-on VGA cards to this motherboard. This motherboard also provides independent display controllers for D-Sub, DVI and LVDS to support dual VGA output so that the D-Sub, DVI and LVDS can drive the same or different display contents.

To enable dual monitor, please connect monitor cables to the respective ports on the I/O panel and the motherboard.



D-Sub port



If you have already installed the VGA driver from our support CD to your system, you can enjoy dual monitor after your system reboots. If you haven't installed the VGA driver yet, please install it from our support CD and restart your computer.



D-Sub, DVI and LVDS monitors cannot all be enabled at the same time. You can only choose two of them.

2.11 Hot Plug for Hard Disk Drives

This motherboard supports Hot Plug for SATA2 in AHCI mode.



What is Hot Plug?

If the HDDs are NOT set for RAID, it is called "Hot Plug" for the action to insert and remove the HDDs while the system is still powered on and in working condition. However, please note that it cannot perform Hot Plug if the OS has been installed into the HDD.

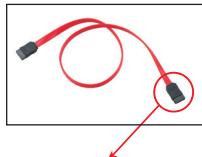
Hot Plug Operation Guide

Please read the operation guide of Hot Plug below carefully. Before you process Hot Plug, please check the cable accessories from the motherboard gift box pack below.

A. 7-pin SATA data cable

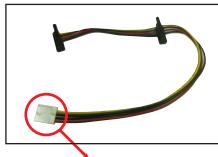
B. SATA power cable with SATA 15-pin power connector interface

A. SATA data cable (Red)



SATA 7-pin connector

B. SATA power cable



The SATA 15-pin power connector (Black) should be connected to your SATA3 HDD

The 1x4-pin conventional power connector (White) should be connected to a power supply

Points for attention, before you process Hot Plug:

1. Without the SATA 15-pin power connector interface, Hot Plug cannot be processed.
2. Even though some HDDs provide both SATA 15-pin power connectors and IDE 1x4-pin conventional power connectors, IDE 1x4-pin conventional power connector's interface is definitely unable to support Hot Plug and will cause the HDD damage and data loss.
3. The operation procedure below is designed only for our motherboard which supports Hot Plug.
 - * Hot Plug might not be supported by the chipset because of its limitation. The support information of our motherboards are indicated in the product spec on our website: www.asrock.com
4. Make sure your HDDs can support Hot Plug from your dealer or HDD user manual. HDDs that do not support Hot Plug will be damaged.
5. Please make sure that the required SATA drivers are installed properly. The latest SATA drivers are available on our support website: www.asrock.com
6. Make sure to use the SATA power cable & data cable from our motherboard package.
7. Please follow the instructions below step by step to reduce the risk of HDD crash or data loss.

How to Hot Plug an HDD:

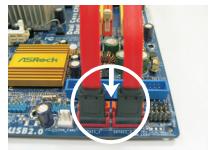
Please follow the instructions below to process Hot Plug. Improper procedures will cause the HDD damage and data loss.

Step 1 Please connect the SATA power cable's 1x4-pin end (White) to the power supply's 1x4-pin cable.



SATA power cable 1x4-pin power connector (White)

Step 2 Connect the SATA data cable to the motherboard's SATA connector.



Step 3 Connect the SATA 15-pin power cable connector's (Black) end to the HDD.



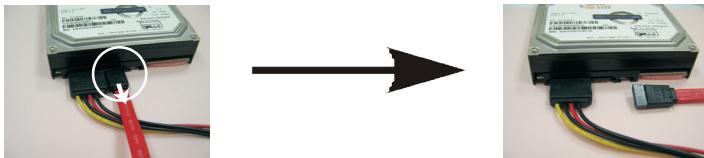
Step 4 Connect the SATA data cable to the HDD.



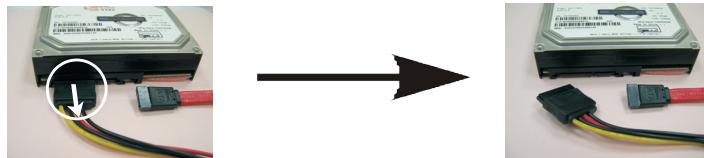
How to Hot Unplug an HDD:

Please follow the instructions below to process Hot Unplug. Improper procedures will cause the HDD damage and data loss.

Step 1 Unplug the SATA data cable from the HDD's side.



Step 2 Unplug the SATA 15-pin power cable connector (Black) from the HDD's side.



Chapter 3: UEFI SETUP UTILITY

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press **<F2>** or **** during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing **<Ctrl> + <Alt> + <Delete>**, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.



Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Main	For setting system time/date information
Advanced	For advanced system configurations
H/W Monitor	Displays current hardware status
Boot	For configuring boot settings and boot priority
Security	For security settings
Exit	Exit the current screen or the UEFI Setup Utility

3.1.2 Navigation Keys

Use < \leftarrow > key or < \rightarrow > key to choose among the selections on the menu bar, and use < \uparrow > key or < \downarrow > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

Navigation Key(s)	Description
+ / -	To change option for the selected items
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

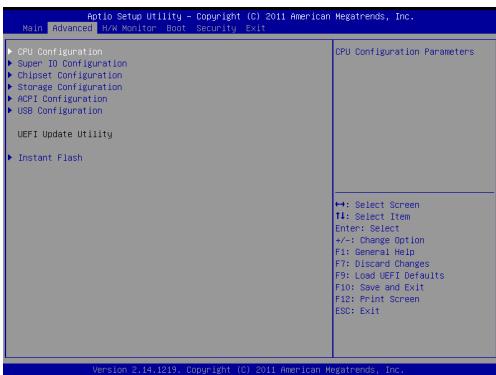
3.2 Main Screen

When you enter the UEFI SETUP UTILITY, the Main screen will appear and display the system overview.



3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Super IO Configuration, Chipset Configuration, Storage Configuration, ACPI Configuration and USB Configuration.



Setting wrong values in this section may cause the system to malfunction.

Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update the system UEFI without entering operating systems like MS-DOS or Windows® first. Just save the new UEFI file to your USB flash drive, floppy disk or hard drive and launch this tool, then you can update your UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after the UEFI update process is completed.

3.3.1 CPU Configuration



Hyper-Threading

To enable this feature, a computer system with an Intel processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology such as Microsoft® Windows® XP / Vista™ / 7 / 8 is required. Set to [Enabled] if using Microsoft® Windows® XP / Vista™ / 7 / 8 or Linux kernel version 2.4.18 or higher. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

No-Execute Memory Protection

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with “No Execute (NX) Memory Protection” can prevent data pages from being used by malicious software to execute codes. This option will be hidden if the current CPU does not support No-Execute Memory Protection.

3.3.2 Super IO Configuration



COM1 Port

Use this to enable or disable COM1 port.

COM1 Port Address

Use this to set the address for COM1 port.

COM2 Port

Use this to enable or disable COM2 port.

COM2 Port Address

Use this to set the address for COM2 port.

LPT1 Port

Use this to enable or disable LPT1 port.

LPT1 Port Mode

Use this to set the mode for LPT1 port.

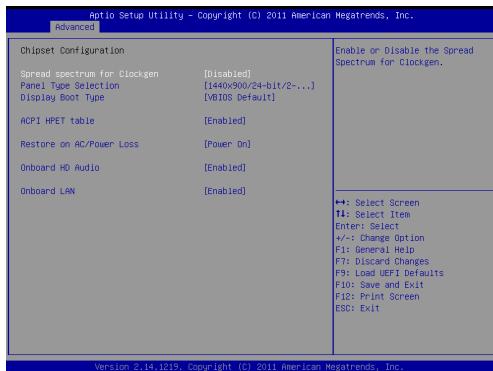
LPT1 Port Address

Use this to set the address for LPT1 port.

WDT Timeout Reset

This allows users to enable or disable the Watch Dog Timer timeout to reset the system.

3.3.3 Chipset Configuration



Spread spectrum for Clockgen

Enable or disable the Spread spectrum for Clockgen.

Panel Type Selection

Use this to select a panel type.

Display Boot Type

Use this to select the video device which will be activated during POST.

ACPI HPET Table

Use this to enable or disable the ACPI HPET Table.

Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/ power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers.

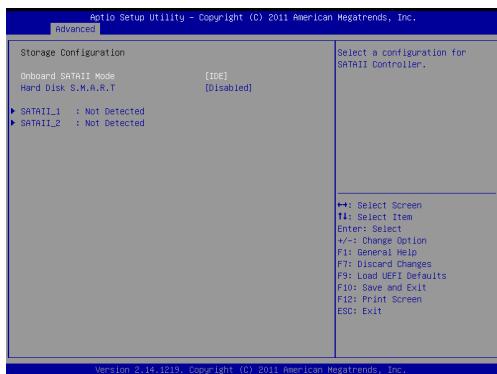
Onboard HD Audio

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio.

Onboard LAN

This allows you to enable or disable the Onboard LAN.

3.3.4 Storage Configuration



Onboard SATAII Mode

Use this to select the SATA mode for SATAII_1 and SATAII_2 ports.

Configuration options: [IDE Mode] and [AHCI Mode].

Hard Disk S.M.A.R.T.

Use this to enable or disable S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology).

3.3.5 ACPI Configuration



Enable Hibernation

Enable or disable the system's ability to hibernate (OS/S4 Sleep State).

Suspend to RAM

Use this to select whether to auto-detect or disable Suspend-to-RAM. Select [Auto] to enable if the OS supports it.

S3 Video Repost

Use this to enable/disable S3 Video Repost.

PS/2 Keyboard Power On

Use this to enable or disable the PS/2 keyboard to turn on the system from power-soft-off mode.

Onboard LAN Power On

Use this to enable or disable the onboard LAN to turn on the system from power-soft-off mode.

Ring-In Power On

Use this to enable or disable the Ring-In signals to turn on the system from power-soft-off mode.

RTC Alarm Power On

Use this to enable or disable the RTC (Real Time Clock) to power on the system.

USB Keyboard/Remote Power On

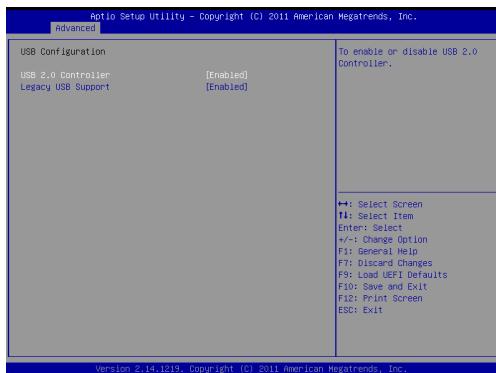
Use this to enable or disable the USB Keyboard/Remote to power

on the system.

USB Mouse Power On

Use this to enable or disable the USB Mouse to power on the system.

3.3.6 USB Configuration



USB 2.0 Controller

Use this to enable or disable the USB 2.0 controller.

Legacy USB Support

Use this to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [UEFI Setup Only]. The default value is [Enabled]. Please refer to the descriptions below for details of these four options:

[Enabled] - Enables support for legacy USB.

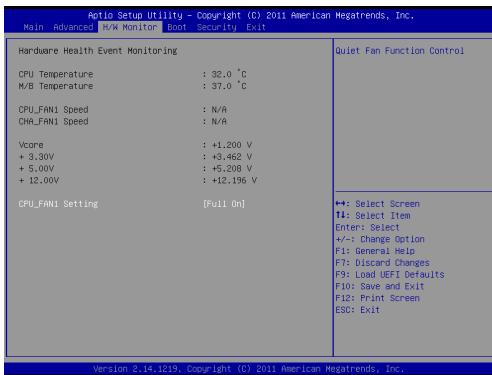
[Auto] - Enables legacy support if USB devices are connected.

[Disabled] - USB devices are not allowed to be used under legacy OS and UEFI setup when [Disabled] is selected. If you have USB compatibility issues, it is recommended to select [Disabled] to enter the OS.

[UEFI Setup Only] - USB devices are allowed to be used only under UEFI setup and Windows / Linux OS.

3.4 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and voltage.

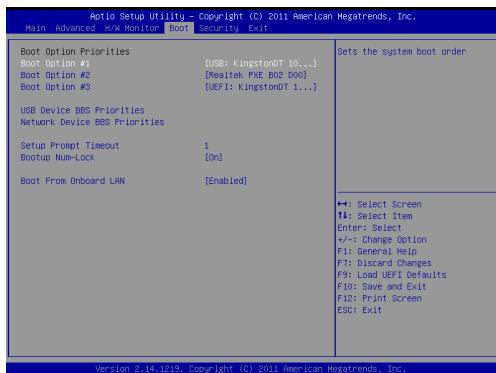


CPU FAN1 Setting

This allows you to set CPU FAN1's speed. Configuration options: [Full On] and [Automatic Mode].

3.5 Boot Screen

This section displays the available devices on your system for you to configure the boot settings and the boot priority.



Setup Prompt Timeout

This shows the number of seconds to wait for the setup activation key.

Bootup Num-Lock

If this is set to [On], it will automatically activate the Numeric Lock after boot-up.

Boot From Onboard LAN

Use this to enable or disable Boot From Onboard LAN.

3.6 Security Screen

In this section you may set or change the supervisor/user password for the system. You may also clear the user password.



3.7 Exit Screen



Save Changes and Exit

When you select this option the following message, “Save configuration changes and exit setup?” will pop out. Select [OK] to save changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When you select this option the following message, “Discard changes and exit setup?” will pop out. Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

Discard Changes

When you select this option the following message, “Discard changes?” will pop out. Select [OK] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all options. The F9 key can be used for this operation.

Launch EFI Shell from filesystem device

Attempt to Launch EFI Shell application (Shell64.efi) from one of the available filesystem devices.